



Original Research Article

## Assessing the Dietary Pattern, Risk Factors and Co-Morbidity among Hypertensive Patients Attending Outpatient Department at Swaroop Rani Nehru Hospital, Allahabad, Uttar Pradesh

Tripathi Jaya<sup>1</sup>, Paul Virginia<sup>2</sup>, Prajapati Aditi<sup>1</sup>

<sup>1</sup>Research Scholar, <sup>2</sup>Associate Professor,  
Sam Higginbottom Institute of Agriculture, Technology & Sciences, Allahabad, India

Corresponding Author: Tripathi Jaya

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### ABSTRACT

Hypertension is one of the leading causes of death and disability among adults.

**Objectives:** 1) To identify the selected risk factors of hypertension. 2) To identify the co-morbidity related with hypertension. 3) To identify the dietary pattern and food consumption frequency of patients.

**Research Design:** The research design selected for this study was cross sectional study and hospital based. 30 hypertensive patients were selected using purposive sampling technique. Study was conducted in Swaroop Rani Nehru Hospital of District Allahabad. The instrument used for the study was structured questionnaire.

**Results:** Results showed that out of 60 patients, 60 % were males. Majority of the subjects 50 % belonged to the agriculture occupation. 56.67 % subjects had the family history of hypertension. Majority of the subjects 50 % have no addiction to either smoking or alcohol followed by smoking (43.33 %) and alcoholic (6.67%). 56.67 % patients have Diabetes Mellitus along with hypertension followed by high cholesterol level (36.67 %). 23.33 % subjects do regular exercise followed by 3-5 days (40 %), less than 3 days (23.33%) and never (13.33 %). Mean systolic blood pressure and diastolic blood pressure was 143.05 mmHg and 83.25 mmHg respectively.

**Conclusions:** Most of the patients had associated co-morbidities. Poor practices related to physical activity and dietary pattern were because of lack of awareness about hypertension. There is need for encouraging health services including nutrition education regarding risk factors.

**Keywords:** Co-morbidity, Out-patient Department, Hypertension, Dietary Pattern, Food Consumption Frequency

### INTRODUCTION

Cardiovascular diseases have been proved to be the leading cause of morbidity and mortality in developed countries, and are gradually emerging as an important health problem in developing countries as well. Hypertension (HTN) is

one of the most common cardiovascular diseases with a prevalence ranging from 10 to 20% among adult population. But being an asymptomatic disorder prior to the onset of other complications, it is associated with a high degree of unawareness among its potential victims (Park, 2005). The Global

Burden of Disease study has projected CAD and CVD as the leading cause of death worldwide by the year 2020. Hypertension, an iceberg disease could be described as the “sleeping snake” which bites when it wakes up. Various factors might have contributed to this rising trend and among others, consequences of urbanization such as change in life style pattern, diet and stress; increased population and shrinking employment have been implicated (Das *et.al* 2005). Hypertension is one of the most prevalent health problems among adults for both developed and developing countries; but health personnel and the society have not perceived it, hence the researcher feels that there is a need to know about the importance of risk factors identification and the prevalence of hypertension among the adults residing in Allahabad district of Uttar Pradesh, India.

## **MATERIALS AND METHODS**

This study was conducted to ascertain the common lifestyle practices and dietary habits among hypertensive patients. Only patients with a confirmed diagnosis of hypertension were recruited and interviewed in order to assess their patterns of lifestyle practices and dietary pattern. For this purpose a cross sectional study design was suitable and appropriate and was used to conduct this research. The study was conducted in Swaroop Rani Nehru Hospital, Allahabad, India. This hospital is popularly known as SRN. The OPD is open from 8:00 A.M. to 2:00 P.M. The medicines are provided free of cost. By taking inclusion and exclusion criteria into consideration total 60 hypertensive patients were selected for study. Since the site of data collection in the study was Swaroop Rani Nehru Hospital, we had to rely on the patients for recruitment, while coming for check-up. The hospital had outpatient department for hypertensive patients only two days namely;

Tuesday and Wednesday in a week. The data was therefore purposely collected only on those two days in a week. Patients aged 30 years and above irrespective of their genders with confirmed diagnosis of hypertension were included in study. Patients below 30 years of age were excluded from the study. Hypertensive patients with complications such as retinopathy, cardio-myopathy, nephropathy, encephalopathy etc were also excluded. Respondents were selected on the basis of purposive sampling. The hypertensive patients who met the inclusion criteria were approached and asked to participate in the study and those who did not meet the criteria were excluded from the study.

### ***Data Collecting Tool***

Structured Questionnaire was used as a tool for data collection. The questionnaire used in this study consisted of the following parts. Socio-demographic part elicited data about the non-modifiable factors such as age, gender, family history as well as modifiable factors such as education, occupation and family income. Hypertension and Co-morbidity part focuses on clinical characteristics; co-morbidities such as diabetes mellitus, heart disease and hypercholesterolemia. Physical Activity part relates to physical activity focused on patients lifestyles which ranged from sedentary to hard or strenuous physical activity. Dietary Pattern and Food Frequency Consumption part includes questions regarding dietary habits concerned, first food preferences of food and second frequency of food consumption.

### ***Data Collecting Procedure***

After Ethelind School of Home Science granted approval for the survey, the permissions were sought from Principal, Moti Lal Nehru Medical College, Allahabad. The director of SRN hospital was requested for co-operation and permission. Data was collected by

researcher herself. Since few number of participants had difficulty in reading or writing, the researcher asked them questions and wrote down their responses without any manipulation. In terms of educated persons, they were asked to answer the questions by themselves and then put it into the boxes provided there.

## RESULTS AND DISCUSSIONS

The increased prevalence of hypertension is a major health problem in developing countries including India. This study was conducted using 60 hypertensive patients aged 30 years and above at Swaroop Rani Nehru Hospital, Allahabad using a structured questionnaire. The purpose of the study was to ascertain the risk factors, extent of physical activities and their dietary habits. The data obtained from the current study are presented and discussed in this chapter. The findings of this study are presented under the following headings; Socio-demographic factors, Co-morbidity, Physical activity, Dietary Habits, Alcohol Consumption, and Smoking were regarded as independent variables and blood pressure (SBP and DBP) as dependent variables.

### *Socio-demographic characteristics*

The minimum age of respondents was 30 years and 6.67 % of participants were aged between 31-40 years, 40 % of participants were aged between 41-50 Years, 46.67 % of participants were aged between 51-60 years and 6.67 % were aged 60 years and above. The finding is consistent with previous research findings. Previous studies have shown there is positive relationship between age and hypertension. There is an increase in systolic and diastolic pressure with age. Although increased blood pressure is not a routine part of aging. It tends to rise in elderly people. Aging is an important risk factor of hypertension (Kornitzer *et al.* 1999). Overall there were more males than

females comprising 60 % and 40 % respectively. Previous studies have shown that the prevalence of hypertension in women is lower than men before the age of 45 years. Men are generally at higher risk than women before menopause (Joshi and Dhar 2000). Although most participants were literate, only 43.33 % reported having a college or higher degree, almost 20 % attended secondary school. Almost 20 % of participants were illiterate.

**Table 1: Demographic and Other Variables**

Variables	No. of Patients	Percentage %
Age	31-40 Years	4 6.67
	41- 50 Years	24 40
	51-60 Years	28 46.67
	>60 Years	4 6.67
Sex	Male	36 60 %
	Female	24 40 %
Education	Illiterate	12 20 %
	Primary	6 10 %
	Secondary	12 20 %
	Intermediate	8 13.33 %
	Degree	26 43.33 %
Occupation	Agriculture	30 50 %
	Service	12 20 %
	Labourer	0 0 %
	Business	10 16.67 %
	Pension	8 13.33 %
Duration of Illness	<5 Years	10 16.67 %
	5-10 Years	38 63.33 %
	>10 Years	12 20 %
Family History	Present	34 56.67 %
	Absent	26 43.33 %
Dietary Pattern	Vegetarian	28 46.67 %
	Non-Vegetarian	32 53.33 %
Marital Status	Married	54 90 %
	Widow/Widower	6 10 %
	Divorced	0 0 %
Habits	Smoking	26 43.33 %
	Alcoholic	4 6.67 %
	None	30 50 %

Distribution of the Hypertensive patients in relation to their occupation the data reveals that 50 % are doing agriculture, 20 % doing government service, 16.67 % were doing business and 13.33 % were getting pension. Almost 90 % of respondents were married and 10 % of the respondents were widower/widow in case of death of husband/wife. No respondent was found either unmarried or divorced. Almost

16.67 % of patients were found to have the diagnosed hypertension for less than 5 years. 63.33 % subjects reported the duration of illness between 5-10 years and 20 % subjects reported the duration more than 10 years. Out of 60 patients 43.33 % patients reported to have smoking as one of the habits. Only 6.67 % subjects reported to be alcoholic. 50 % of the respondents were found to have none of the above mentioned habits. Deswal *et al.* (1991) also reported that Persons who take alcohol were found to be 3.75 times more at risk of developing hypertension as compared to teetotallers Approximately 46.67 % patients were reported to be vegetarian in their dietary pattern and 53.33 % subjects were found to be non-vegetarian. Approximately 56.67 % of respondents were found to have a family history of hypertension. 43.33 % patients have not found with any family history of hypertension.

**Co-morbidity**

The majority of participants had a positive history of diabetes mellitus in addition to hypertension. 56.67 % of all participants have had a diagnosis of diabetes mellitus and 43.33% reported no clinical history of diabetes mellitus. Overall, 36.67 % of all the participants had been diagnosed with high cholesterol levels (hypercholesterolemia), but 63.33 % participants reported a negative history. None of the participants were found to have other problems apart from diabetes mellitus, hypercholesterolemia.

**Table 2: Incidence of Co-morbidity with Hypertension**

Variables		No. of Patients	Percentage %
Diabetes	Present	34	56.67 %
	Absent	26	43.33 %
High Cholesterol Level	Present	22	36.67 %
	Absent	38	63.33 %

**Physical Activity (Days per Week)**

The majority were participants were found to lead sedentary life styles although a

very small number was engaged in strenuous or hard physical activities. Overall 23.33 % of participants reported physical activities particularly household activities on 6 to 7 days per week, whereas only 13.33 % were completely physically inactive. The percentage of participants with their physical activities for less than 3 and 3-5 days per week were 23.33 % and 40 % respectively. Deswal *et al.* (1991) also reported that the individuals engaged in sedentary activities were found to have to be having a relative risk of 2.73 times as compared to those engaged in moderate and heavy physical work.

**Table 3: Association of Hypertension with Physical Activity**

Physical Activity	No. of Patients	Percentage %
Never	8	13.33
Less than 3 Days	14	23.33
3-5 Days	24	40
More than 6 Days	14	23.33

**Dietary Habits**

**Food Frequency**

The frequency of specific foods consumed by study participants was taken from items listed on the food frequency questionnaire completed by during the study visit. The majority of participants, 56.67 % reported eating rice daily whereas 100 % participants eat wheat daily. The majority of participants (100 %) reported eating whole pulses (legumes) daily whereas only 22.33% eat citrus fruit daily and 6.67 % ate other fruits daily. Vegetables were eaten quite regularly. Forty percent reported to eat green leafy vegetables 2-3 times a week. Potatoes were consumed daily by 13.33 % subjects. Only 30 % participants reported to have consumption of low fat milk daily and 70 % drank whole milk daily. More than half of the participants seldom or never consumed mutton or fish whereas only 6.67 % reported to consume chicken once a month. Tea was the beverage of choice consumed by 100 % of the participants daily. Processed foods

such as snacks and canned food were not common. Snacks and canned food were consumed seldom or never by 40 % and 43.33 % respectively. Seldom use of butter and ghee was seen among patients i.e. 40 %

and 13.33 % respectively. Approximately 46.67 % patients reported to have salty food daily and approximately 70 % respondents reported to consume additional table salt to cooked food daily.

**Table 4: Food Consumption Frequency of Respondents**

Food Categories	Never (N)	Seldom (N)	Once a month (N)	Once a week (N)	2-3 times a week (N)	Daily (N)
Cereals						
Rice	-	-	-	-	26	34
Rice Flakes	6	-	16	8	20	10
Whole Wheat Flour	-	-	-	-	-	60
Maida	-	8	14	6	14	16
Semolina	4	28	12	4	12	-
Millets	46	12	2	-	-	-
Pulses						
Whole pulses	-	-	-	-	-	60
Washed pulses	-	22	10	4	24	-
Sprouts	18	28	-	-	4	10
Fruits						
Citrus	-	16	6	8	16	14
Other fruits	-	24	4	16	12	4
Vegetables						
Green leafy vegetables	-	-	-	26	24	10
Vegetable roots	-	-	-	32	20	8
Dairy Products						
Whole milk	-	18	-	-	-	42
Low Fat Milk	-	-	-	26	20	14
Meat Products						
Eggs	34	-	-	22	4	-
Fish	40	-	12	8	-	-
Poultry	32	24	4	-	-	-
Beverages						
Carbonated Beverages	-	22	10	28	-	-
Coffee	20	24	16	-	-	-
Tea	-	-	-	-	-	60
Fresh juice	28	6	8	10	-	8
Processed food						
Ready-made Snacks	-	24	10	14	6	6
Canned food	26	22	12	-	-	-
Nuts/Dried fruits	-	34	22	4	-	-
Fats and Oils						
Butter	-	24	14	22	-	-
Ghee	-	8	16	8	14	14
Sweets	-	4	18	22	12	4
Salty Food	-	-	4	6	22	28
Use of Table salt	-	-	-	-	18	42

### Blood Pressure

The Systolic Blood Pressure of participants involved in this study ranged from 110 to 220 mmHg. The minimum SBP recorded was 100mmHg, while the maximum was 220 mmHg. The mean and median values of SBP were 143.05 and 140 mmHg respectively with standard deviation 17.219. The diastolic Blood Pressure of

participants involved in this study ranged from 53 to 116 mmHg. The minimum DBP recorded was 53 mmHg, while the maximum was 116 mmHg. The mean and median values of DBP were 83.25 and 80 mmHg respectively with standard deviation 9.205.

**Table 5: Mean Systolic BP and Diastolic BP of Respondents**

Blood Pressure	Minimum	Maximum	Mean	S.D.
SBP	110	220	143.05	17.219
DBP	53	116	83.25	9.205

### ***Systolic and Diastolic Blood Pressure***

Almost 63.33 % of participants were found to have their SBP equals 140mmHg or above and 36.67 % below 140mmHg. 40 % of participants were found to have their DBP equals 90 mmHg or above and 60 % below 90 mmHg.

**Table 6: Systolic Blood Pressure and Diastolic Blood Pressure of Respondents**

		No. of Patients	Percentage
SBP	< 140 mmHg	22	36.67 %
	>=140 mmHg	38	63.33 %
DBP	< 90 mmHg	36	60%
	>=90 mmHg	24	40 %

Although blood pressure was not found to be significantly associated with demographic factors and dietary habits, the descriptive results revealed that sedentary lifestyle, unhealthy dietary habits were pronounced in participants. However some patients did not have their blood pressure under control. It indicates that only pharmacological treatment or use of drugs is not sufficient to reduce and control blood pressure. It emphasizes the need to focus on blood pressure control through non pharmacological treatment (lifestyle measures) rather than pharmacological treatment alone. Sahukhan *et al.* (2005) also reported the age, BMI, occupation, stress, additional salt intake with diet accounted to about 42% of systolic blood pressure (SBP) and 26.6% of diastolic blood pressure (DBP) variation. Age was the most important factor compared to other risk factors (17.4% of SBP and 8.6% of DBP).

### **CONCLUSION**

Hypertension is a dangerous health condition that can be managed through personal behaviours such as eating a healthy

diet and engaging in regular physical activity, as well as taking medications that lower blood pressure. The present study was to assess the dietary habits and identification of selected risk factors of hypertension among patients in Allahabad district. It can be therefore concluded that lifestyle related risk factors such as excess body weight; low levels of physical activity and consumption of unhealthy diets were evident in hypertensive in SRN Hospital. A high percentage of participants were found to lead sedentary and physically inactive lifestyles and consume fat rich diets. Health education and counselling programmes for both patients and the public should be developed in order to increase awareness regarding causes, consequences, prevention and control of hypertension. Fruits and vegetables consumption should be encouraged and promoted while salt and fat consumption should be discouraged.

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